

REPORT BY THE

Comptroller General

OF THE UNITED STATES

~~TOP SECRET~~
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Welfare Payments Reduced: An Improved Method For Detecting Erroneous Welfare Payments

Working together, GAO and the District of Columbia's Department of Human Resources developed three formulas to identify welfare cases that have a high probability to be in error. The formulas assign computer-derived numerical scores to cases that need to be reviewed and rank them in order of their error potential.

The District started using one formula in May 1977. Over a year's time, erroneous welfare payments will have been reduced by about \$3.5 million or nearly double the reduction in erroneous payments that could have been obtained using the District's procedures.

The approach GAO used in the District is applicable to State and local governments.



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report

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COMPTROLLER GENERAL OF THE UNITED STATES

WASHINGTON, D.C. 20548

P-118638

The Honorable Joseph A. Califano, Jr.
The Secretary of Health, Education,
and Welfare

Dear Mr. Secretary:

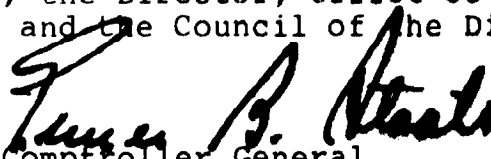
On many occasions, the Congress has expressed concern over escalating welfare costs, the number of payment errors, and ineligible persons in the Aid to Families with Dependent Children program. According to information from the Department of Health, Education, and Welfare, an estimated \$440 million of Federal and State funds were misspent nationwide in the first 6 months of 1977 and about \$8 million was misspent in the District.

This report, on the District of Columbia, discusses computer methods for detecting potential erroneous welfare payments. Although the methods were developed using data concerning the District of Columbia's welfare program, the approach we used is applicable to State and local governments. Similar formulas reflecting the individual problems of each location could be developed and used in reducing erroneous welfare payments.

This report contains recommendations to you on page 23. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report and to the House and Senate Committee on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

B-118638

We are sending copies of the report to chairmen of interested congressional committees; the Director, Office of Management and Budget; and the Mayor and the Council of the District of Columbia.


Comptroller General
of the United States

GENERAL ACCOUNTING OFFICE
REPORT TO THE SECRETARY,
DEPARTMENT OF HEALTH, EDUCATION,
AND WELFARE

WELFARE PAYMENTS REDUCED:
AN IMPROVED METHOD FOR
DETECTING ERRONEOUS
WELFARE PAYMENTS

D I G E S T

The Department of Health, Education, and Welfare (HEW), requires all Aid to Families with Dependent Children (AFDC) welfare cases be reviewed every 6 months to determine continued eligibility and correctness of payments. According to the District of Columbia, limited staff allowed only 20 percent of its 31,300 AFDC cases to be reviewed. It needed an effective method to identify potential error cases to permit more efficient use of manpower, to increase the number of error cases reviewed, and to materially reduce errors and incorrect payments. District of Columbia AFDC payments for fiscal year 1977 totaled about \$91 million, of which \$45.5 million was paid by the Federal Government.

Working with the District's Department of Human Resources, GAO developed three formulas that assign computer-derived numerical scores to cases that need to be reviewed and rank them in order of their error potential.

The methods will help the District

- make better use of staff by having them concentrate their reviews on correcting cases most likely to be in error,
- remove ineligible recipients from the welfare rolls,
- correct overpayments and underpayments to eligible recipients, and
- accumulate information to increase caseworker productivity and generally improve welfare program administration.

The District reviewed only 15 percent of its welfare cases from May 1977, when it started using one of the formulas, through April 1978. During that period, erroneous welfare payments were reduced by \$3.5 million, or nearly double

the amount that was possible using its procedures. Other results will be reductions in medicaid and food stamp benefits paid to erroneous AFDC cases. Because conditions change over time, the formula must be updated to ensure its continued usefulness in identifying welfare cases with high potential for error.

The approach used to develop the formulas can be used by State and local governments. Similar formulas would be useful to most jurisdictions and particularly useful to those that do not review all cases every 6 months. Their use should produce for them benefits similar to those of the District. Also, the use of the formulas by State and local governments could help HEW achieve, nationwide, reductions in incorrect welfare payments. For the Federal Government alone, AFDC welfare payment errors for the first 6 months of 1977 total about \$234 million. Additional erroneous payment reductions are possible from discontinuing or adjusting medicaid and food stamp benefits related to erroneous AFDC cases.

The formulas should be used as a supplement, and not a substitute, for complying with HEW regulations requiring all cases to be reviewed every 6 months.

The Secretary of HEW should distribute this report to State and local governments and emphasize to them that using formulas similar to the ones GAO developed could help in reducing incorrect welfare payments.

HEW is supportive of this effort in the District. However, it is concerned that the report, as written, is not in sufficient detail and does not provide guidelines and information describing a workload planning system to help States implement a formula for selecting welfare cases for review and improving welfare management.

GAO's intent was not to provide a manual of procedures for State and local governments. Because State and local governments are different, procedures must be tailored to fit their individual needs. However, GAO's report can

help them improve their welfare case selection methods and reduce erroneous welfare payments. HEW, in carrying out its responsibility for providing technical assistance to States, can help them with specific application and procedural development for improving welfare case handling.

The report should be distributed to State and local governments in advance of the national workshop on workload planning to be held by HEW in April 1979. The District of Columbia is to be a part of the workshop. Advance study of the report by government representatives should help facilitate their understanding when the formula and its use for improving welfare administration is discussed.

GAO agrees with the Secretary, HEW, that waste in welfare be eliminated. Payments should be made only to eligible persons and for the proper amounts. The formula similar to that used in the District could help State and local governments achieve this desired result.

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ABBREVIATIONS

AFDC	Aid to Families with Dependent Children
GAO	General Accounting Office
HEW	Department of Health, Education, and Welfare

CHAPTER 1

WHY WE DEVELOPED ERROR CASE SELECTION FORMULAS

Proper administration of public assistance programs is extremely important. Prospective public assistance recipients should be able to rely on management to advise them of their eligibility for welfare and, if they are eligible, to provide them proper payments. Also, taxpayers expect their tax dollars to be spent efficiently.

In the District of Columbia, as well as in other localities, many public assistance recipients receive erroneous payments. According to the Department of Health, Education, and Welfare (HEW), about \$440 million, Federal and State funds, was estimated to be erroneously paid in the first 6 months of 1977.

Working with the District's Department of Human Resources, we developed three formulas which could be used to help the District (1) select potential error cases for review and (2) reduce erroneous welfare payments without increasing staff. We also made recommendations to improve the management of its welfare program. Although the specific formulas apply only to the District of Columbia, the methods we employed can also be used by State and local governments in their efforts to reduce welfare errors and erroneous payments. Data similar to that used in developing the formulas should be available in other jurisdictions' welfare programs.

FORMULAS HELP IDENTIFY ERRORS IN THE WELFARE CASELOAD

Many people receiving welfare are ineligible, overpaid, or underpaid. Therefore, Federal, State, and local governments have erroneously paid millions of dollars. Because we are concerned about the District's high error rate, we examined its procedures for determining recipients' welfare eligibility.

Aid to Families With Dependent Children (AFDC) is one of the largest public assistance programs of the Federal Government. This program--directly administered by the States and the District of Columbia--provides financial assistance to needy children and their parents or relatives to encourage the care of dependent children in the home. The program is administered, at the Federal level, by HEW. Federal and State payments during fiscal year 1977 amounted to \$10.2 billion, of which \$5.5 billion was the Federal share. The District of Columbia payments for fiscal year 1977 totaled

about \$91 million, of which \$45.5 million was paid by the Federal Government. The District's average monthly AFDC caseload in fiscal year 1977 was about 31,300.

HEW reports show the case error rates in each State. The reports also show the payment error rates, which consist of payments to ineligible and overpayments to eligibles as a percent of total payments. 1/ The District's AFDC case error and payment error rates were higher than the national average.

According to HEW information for the first 6 months of 1977, the nationwide average monthly caseload was about 3.5 million and 5.4 percent of these cases were ineligible for welfare, 12.5 percent were overpaid, and 5 percent were underpaid. The HEW information shows that the case error rate in the District of Columbia for 1977 was about 12 percent ineligible, 26 percent overpaid, and 8 percent underpaid. The nationwide payment error rates were 4.9 percent for payments to ineligible and 3.7 percent for overpayments to eligibles. An estimated \$440 million was paid to people who were ineligible or overpaid. The underpayments to eligible recipients was 0.9 percent of total payments, or about \$45 million. For the first 6 months in 1977, in the District of Columbia, the payment error rate to ineligible was 9.1 percent and overpayments to eligibles was 8.8 percent. Underpayments to eligible recipients was 1.5 percent of total payments.

Welfare eligibility is determined when a prospective recipient applies for assistance. When applications are received, caseworkers are required to interview the applicants, make independent verifications of data presented, and document all eligibility and payment factors. Some of the eligibility factors that must be verified and documented when a person applies for AFDC, include determining whether:

- The children are under 18 years of age and living with the person applying for welfare.
- Children 18 years or more are regularly attending school.
- The applicant is working and, if so, the amount of income.
- The applicant lives in the District of Columbia.

1/HEW's report on comparison of error rates by States. Based on results of quality control tests for the first 6 months of 1977.

--The children are deprived of parental support because of the death, absence, incapacity of the parent(s), or unemployment of the father.

If the person is eligible, the amount of the monthly payment is established and arrangements for the issuance of a check are made.

Eligibility, once established, is not constant, but subject to continuous change. For example, if a welfare recipient decides to work, the earnings may make the recipient either ineligible for a welfare payment or may require the payment to be adjusted. Also, a person moving to a different city or State is no longer eligible for payments from the former paying jurisdiction.

Because of these possible changes in eligibility, HEW regulations require that periodic redetermination reviews be made of all cases. The redetermination review is to be made every 6 months, and it involves essentially the same work as the initial verification process. The District has not met this 6-month requirement because of insufficient staff. According to the District, caseworkers reviewed only about 20 percent of the caseload every 6 months.

Because all of the cases are not reviewed every 6 months, redetermination is delayed, which contributes to the high error rate--the longer a case goes without being reviewed the more apt it is to be in error. The District's procedures were analyzed, including its systems for selecting cases for review, to determine its effectiveness in selecting cases in error and reducing welfare payments.

At the time of our analyses, the District did not have a way to zero in on error cases. Cases due for review were selected in alphabetical order. Thus, there was no assurance that caseworkers' time was spent most productively, that is, reviewing cases with the greatest potential for error.

Our review was directed, therefore, toward developing a method of selecting for review those cases that would most likely be in error. The more error cases reviewed and corrected, the greater the chance to increase savings in welfare payments. The formulas we developed were designed to do this.

FORMULAS ALLOW MORE EFFICIENT USE OF STAFF

In addition to identifying cases most likely to be in error and thus increasing the chance of reducing welfare

payments, the approach we used will help the District--and could help local and State governments--make better use of its caseworkers.

For example, suppose 1,000 cases are to be reviewed each month but there are only enough caseworkers to review 100 cases. Suppose also that 45 percent of the 1,000 cases are in error. If the 100 cases to be reviewed were selected randomly, it would be expected that 45 would be in error. Our method isolates cases with a higher-than-average chance of being in error. If our method was used, the 100 cases selected would contain more than 45 error cases--perhaps as many as 60 to 70. Thus, caseworkers' efficiency would improve, and the error rate would be reduced without increasing the staff.

The system, including the error case selection method and the recommended management changes, also provides that reports will be prepared which show caseworkers' productivity and results of redetermination reviews. This data should help management monitor operations and evaluate employee performance and accountability and increase the effectiveness of the welfare program.

CHAPTER 2

HOW WE DEVELOPED AND TESTED THE FORMULAS

We developed the formulas using statistical techniques that identified certain case characteristics that would have the potential for predicting whether a case would be in error. The formulas were developed from one set of cases and tested on other cases. The general procedures are discussed in this chapter; more specific and statistical details are included in appendixes I to IV.

PRELIMINARY FORMULA RESEARCH

The formulas generate, for each case due for review, a numerical score based on the weights assigned to different case characteristics. Thus, before developing the formulas, we made some judgments as to the characteristics that were likely to indicate that a case is in error. We reviewed quality control and redetermination review results, and data from other locations as sources for identifying target characteristics. Also, since the formulas are developed by use of computer, we made a match to see if most or all of the characteristics were maintained in existing computer files. Such a comparison showed the type of data already available and the additional data needed. As stated, we identified and reviewed case selection systems used by other localities to help us in designing the total system needed to meet the specific requirements of the District. This kind of research helped to minimize the time and cost of making the analysis.

In performing the research, we kept in mind that while the formulas can help select high probability error cases, they are only one part of the total management system needed to get effective results. Other essential parts include monitoring employee productivity and the quality of their case reviews, and reviewing results and establishing the procedures for minimizing the number of error cases getting on the rolls. These procedures are discussed in later sections of this report.

THE FORMULAS DEVELOPED

We developed three alternate formulas for selecting potential error cases for review. Each formula assigns numerical scores to cases due for review and ranks them according to their error potential. High scores are assigned to cases that have a high probability of being in error; low scores are assigned to cases that have a low probability of being in error. Cases are selected for review according to their scores.

We developed three formulas because we believed management had three options it could pursue depending on the end results to be achieved. For instance, if reductions in costs are the immediate concern, then a formula for selecting cases with potentially high overpayments would be more useful; if reduction in error rates is paramount, then a formula for achieving that goal would be more appropriate. After one formula achieves a particular result, it could be discontinued in favor of another one. The three formulas we developed are:

1. Overpayment--Designed to identify cases that are overpaid regardless of the amount.
2. High overpayment--Designed to identify cases that are overpaid by \$100 or more a month.
3. Ineligible--Designed to identify cases that are ineligible for welfare.

DEVELOPING THE FORMULAS

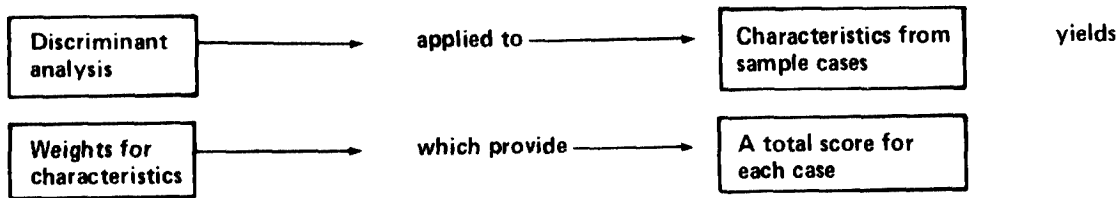
Although HEW requires all welfare cases to be reviewed every 6 months, the District, because of limited staff, reviewed only 20 percent of its caseload. Therefore, we developed formulas that would help identify potential error cases to increase employee productivity and reduce erroneous welfare payments.

The formulas use a method called "discriminant analysis," which is a statistical technique used to identify characteristics which differentiate certain cases from others. We used the technique to identify characteristics, such as ages of children and income of recipients, of a sample group of welfare cases, which distinguish between those cases in error and those not in error.

To use discriminant analysis, we collected characteristics for a representative sample of several hundred cases and included those thought to have a potential for predicting whether a case will be in error or not in error. The sample cases were separated into two known groups--for this analysis, error cases and nonerror cases.

Using statistical techniques, we evaluated the characteristics for each case in the sample in terms of their ability to predict error, and those found to be important were assigned a numerical weight. The relative importance of each characteristic determined the assigned weights. The weights were used to calculate a total score for each case.

The weights are mathematically assigned in a way that maximizes the differences in the total score between the cases in the two groups, that is, error cases versus nonerror cases. The total process can be figuratively described this way.



The result is the identification of characteristics and their relative importance in predicting error. Each case in the caseload is scored using these formulas. Cases with the highest scores would most likely be in error.

Using quality control data

HEW requires a welfare Quality Control Program. States are required to randomly sample and audit, every 6 months, a minimum number of cases based on their AFDC average caseload. We used 2,481 cases audited by the District's Quality Control Group in the three review periods during July 1974 through December 1975 to develop and test the three formulas. We used these cases because the audit results were considered reliable and representative of the entire AFDC caseload. The formulas were developed using the 833 cases in the July through December 1975 sample. They were tested using the 1,648 cases from the other two sample periods.

Selecting case characteristics

What characteristics are indicators of error potential? To find an answer to this question required research and tests. Based on our prior work concerning the District's welfare program, discussions with District welfare program officials, quality control review results, and data available from other States that had experience in error case selection systems, we identified 74 characteristics that had potential for predicting errors. Our evaluation was limited to 17 of these characteristics because they were in existing computer files, and thus, could be utilized in assigning scores to cases by computer, without requiring additional data collection. A listing of the 17 characteristics is included in appendix I.

We used step-wise discriminant analysis 1/ on these 17 characteristics to develop formulas which did the best job of selecting potential error cases given the specific management objectives discussed on page 6. From the analysis, formulas consisting of seven to nine characteristics were developed.

The following illustrates the type of characteristics and weights a formula might contain. This is a hypothetical case; actual characteristics are not shown in order to protect the integrity of the formulas.

Overpayment Formula

<u>Characteristics (note a)</u>	<u>Weight</u>
Case records show earned income	116.531
Children under 6	68.994
Amount of welfare grant is not equal to standard payment level	63.768
Male head of household	99.182
Cost of housing over \$300 a month	34.221
Receiving check for less than 18 months	45.442
An adult is included in the assistance group	53.487
Children over 16	64.589

a/In this example the presence of a characteristic is valued at 1; absence of characteristic is valued 0.

Each case would receive a total score based on its individual characteristics. A case score is calculated by multiplying the weights by the value of the characteristics (if the case had earned income it would get a score of 116.531, if not, it would get a score of zero on that characteristic),

1/Step-wise discriminant analysis involves the approach described on p. 6 using a repetitive process. All characteristics are considered at the same time. The single characteristic with the best potential for predicting error is allowed to enter the formula. The remaining characteristics are then examined with the second best predicting characteristic joining the first in the formula. The remaining characteristics are examined and a third characteristic is entered into the formula. This procedure was repeated until all the characteristics which materially contribute toward predicting errors have entered the formula. The statistical package used to make the compilation was the Statistical Package for the Social Sciences.

and adding the values assigned. Cases with the highest score have the most potential for being overpaid.

TESTING THE FORMULAS

To see if the formulas had the capability to select potential error in cases other than the cases used in their development, we tested the formulas on 1,648 cases reviewed by the Quality Control Group. The tests' results, discussed in greater detail in appendix IV, showed that the formulas could be used to identify those cases with the highest probability of error. This was true regardless of which of the three formulas was used. Thus, we found that the formulas would be useful in selecting potential error cases no matter which of the three objectives management chose to attain.

CHAPTER 3

HOW WE MEASURED THE FORMULAS' CAPABILITY TO

SELECT POTENTIAL ERRORS AND REDUCE WELFARE PAYMENTS

To judge the effectiveness of the formulas, we compared their estimated results to the results of both the District's priority system and a random sample. The comparisons produced data to help decide whether existing procedures should be changed and, if so, what selection method should be used. The priority system and random sampling are discussed below.

In 1975 the District developed a priority system for identifying cases that could be in error. The priority system assigned AFDC cases to one of seven error potential codes. A case with code number one was expected to have the highest error potential and would have been reviewed first. The priority codes were assigned by a computer. A list is prepared of all cases due for review and their associated priority codes. The priority ranking was not based on statistical formulas but was assigned to cases on the basis of experience with case characteristics that historically have caused errors. The priority system was used only for a special review of all AFDC cases. It was not used to select cases due for redetermination review.

Random sample selection is a statistical method whereby the cases are selected for review without regard to their probability to be in error; that is, each case in the total caseload has an equal chance of being selected. We believe that, to be effective, both the formulas and the District's priority system should outperform a random sample in identifying potential error cases in the caseload.

RESULTS OF COMPARISONS

Regardless of the selection method used, some cases will contain errors. The errors will include cases that are ineligible, eligible but overpaid, and underpaid.

Because the purpose of each of the five selection methods is different, a comparison of the errors for each category of cases or the dollar savings for each case should not be used to judge whether one case selection method is better than another. However, this type of information can help management decide the method to use.

For example, if management is more interested in reducing dollar errors, it would select the formula that would give the

highest dollar return. All three of our formulas were superior to the District's priority system and a random sample in reducing welfare payments. The three formulas, based on a 20-percent review, produced from \$14 to \$44 more in identified erroneous payments per case reviewed than the priority system and from \$4 to \$34 more per case reviewed than a random sample.

GAO/District formulas best for selecting erroneous payments

The following table compares the estimated results that could have been achieved if the GAO/District formulas, the District's priority system, and random sampling had been applied to the July-December 1975 caseload. The results are based on reviews of only 20 percent of the cases. Appendix V shows the estimated results if 40 and 60 percent of the cases were reviewed.

Percent of cases reviewed	Selection methods	Percent of cases selected for review that would be in error			Average monthly net overpayment per case reviewed
		Ineligible	Overpaid	Underpaid	
20	District's priority system	18	41	14	\$32
	Random sampling	13	24	7	42
	GAO/District formulas:				
	Overpayment formula	18	45	14	46
	High overpayment formula	21	36	5	76
	Ineligible formula	27	25	8	57

Regardless of the management objective pursued, the formulas produced better dollar results--the high overpayment formula was best for this purpose. The net overpayment per case reviewed using the formulas was from 44 to 137 percent higher than the net overpayment that would have been obtained using the priority system.

Concerning each of the three formulas, the ineligible formula identified more cases that were ineligible; the high overpayment formula identified more cases that were paid too much; and the overpayment formula was superior in identifying the total number of error cases.

Effect on reducing the error rate

One benefit expected from an error case selection method would be a reduction, over time, of error cases as a percentage of the caseload. We estimated what the error rate would be using the various methods to select cases for redetermination review for 1 year.

Our projections, because of the assumptions made, do not represent what the error rates would be at the end of the year, but set forth the estimated effect on the error rates. The table shows forecasts of caseload error rates under each selection method for the year ended June 30, 1976. The table also shows the estimated annual net savings in erroneous welfare payments of each selection method. The forecasts are based on 20 percent of the cases being reviewed. Appendix VI includes the assumptions made in making these forecasts, and it also includes a table showing the expected results if 40 percent and 60 percent of the cases were reviewed.

Selection methods	Percent of caseload in error at the end of the year			Net savings in erroneous welfare payments (millions)
	<u>Ineligible</u>	<u>Overpaid</u>	<u>Underpaid</u>	
District's priority system	12.2	20.7	5.1	\$1.87
Random sampling	13.2	24.4	6.7	2.39
GAO/District formulas:				
Overpayment formula	12.2	19.8	5.2	2.70
High overpayment formula	11.3	21.8	7.2	4.31
Ineligible formula	9.9	24.4	6.5	3.28
<u>Error rate at beginning of year</u>				
	13.4	24.4	6.6	

Reduction in the error rate

As expected, caseload yearend error rates vary with the selection method used. However, what becomes abundantly clear is that given the present level of review, none of the

selection methods promises any "quick fixes" to the high error rate the District is experiencing. The table also shows the trade-offs management must make between dollar yield and error rate reductions. Appendix VI includes a table showing the possible error rate reductions achievable through higher levels of review.

Reduction in erroneous welfare payments

Of major significance is the effect on welfare payments. The formulas offer the decisionmaker a wide choice in trade-offs between levels of error reduction and reducing erroneous welfare payments. The high overpayment formula was the most effective. The net reduction in erroneous welfare payments--overpayments less underpayments--using the formulas ranged from about \$830,000 to about \$2.4 million more than the amount that would be saved using the District's priority system.

The priority selection method was more effective in identifying underpayments than the formulas, and helps explain some of the superiority the formulas are credited with in welfare savings. For example, the amount of underpayment, as identified by the priority system was \$61 per case, as compared to underpayments identified by the formulas which ranged from \$44 (high overpayment) to \$52 (overpayment). However, most of the differences in net reduction in welfare payments between the formulas and the priority system are attributable to the formulas' superiority at identifying highly overpaid cases.

Variances exist in the expected results from the use of the different selection methods. Each selection method was designed to best obtain a different management objective; the formulas were designed to identify different types of potential error cases. Thus, in choosing an error case selection method, trade-offs must be made--dollar versus error rates. The selection, of course, is a management decision.

CHAPTER 4

THE HIGH OVERPAYMENT FORMULA IN OPERATION

The District started using the high overpayment formula on May 1, 1977. Redetermination review results for the first 10 months show the formula works. The reviews have identified 8.4 percent more error cases than originally predicted by the test and the net amount of overpayment per case was about \$53.49.

It is important to point out that the formula required very few operational changes and hardly any additional costs to the District. The only change involved writing a computer program to compute the scores and rank the cases for review. Adoption of this selection technique by other jurisdictions should also require minimal change and little additional costs.

An implementation plan should be developed setting forth the management controls necessary for effective and efficient system operation. It should include controls concerning case selection, reporting case review results, worker productivity, and corrective action needed to help prevent errors from happening again. It should also include plans for regular periodic formula updates.

RESULTS AFTER 10 MONTHS IN OPERATION

The following tables show the results of redetermination reviews using the GAO/District formula for the first 10 months. Of the 8,576 cases reviewed, 4,427 cases were in error.

Results of Redetermination Reviews

Table I

<u>Month</u>	<u>Correct</u>	<u>Ineligible</u>	<u>Overpaid</u>	<u>Underpaid</u>	<u>Other</u> <u>(note a)</u>	<u>Total</u>	<u>Average</u> <u>monthly net</u> <u>overpayment</u> <u>per case</u>
----- (percent) -----							
May 1977	45.2	19.3	22.1	5.4	8.0	100.0	\$55.02
June 1977	38.2	20.4	24.0	8.7	8.7	100.0	54.95
July 1977	38.9	26.6	16.7	8.9	8.9	100.0	60.04
Aug. 1977	37.6	25.3	20.5	9.9	6.7	100.0	62.04
Sept. 1977	45.0	20.6	19.8	7.6	7.0	100.0	48.57
Oct. 1977	44.6	22.0	21.2	7.5	4.7	100.0	56.99
Nov. 1977	46.1	18.1	23.0	7.6	5.2	100.0	48.94
Dec. 1977	44.4	21.1	20.6	9.5	4.4	100.0	47.53
Jan. 1978	43.3	19.6	25.1	9.3	2.7	100.0	50.90
Feb. 1978	41.7	21.1	23.3	10.3	3.6	100.0	49.87
10-month average	42.5	21.5	21.6	8.6	5.8	100.0	\$53.49

a/These are cases where (1) an error existed but there were no changes in the grant amount or (2) an error existed but was in the process of being corrected at the time the redetermination review was made.

Table II

<u>Month</u>	<u>Cases</u> <u>completed</u>	<u>Cases</u> <u>in error</u>
May 1977	462	216
June 1977	678	360
July 1977	753	393
Aug. 1977	1,201	670
Sept. 1977	899	431
Oct. 1977	991	502
Nov. 1977	1,309	637
Dec. 1977	738	378
Jan. 1978	750	405
Feb. 1978	795	435
Total	<u>8,576</u>	<u>4,427</u>

While the above data indicates that the formula is working, a better measure of its effectiveness is a comparison of the results achieved with what was predicted. The following table compares the estimated and actual results.

<u>Cases</u>	<u>Percent of error cases</u>	
	<u>Estimated</u> (note a)	<u>Actual</u> (note b)
Ineligible	15.5	21.5
Overpaid	24.8	21.6
Underpaid	<u>3.0</u>	<u>8.6</u>
Total	<u>43.3</u>	<u>51.7</u>
Average monthly net overpayment per case reviewed	\$54.98	\$53.49

a/The estimated percent of error cases does not agree with those shown on page 11, because those percentages are based on the Quality Control Group reviews. Generally, Quality Control reviews take more time and are more detailed than reviews made by the redetermination worker. As a result, the Quality Control Group finds more errors. We, therefore, adjusted the estimated error percentages, based on actual data (see assumption on p. 38) to allow for the fact that redetermination will not detect all error cases.

b/Does not include the 5.8 percent other category on table I on the preceding page.

The percentage of ineligible and underpaid cases is more than estimated. The percent of overpaid is less. In total, the reviewers aided by the formula identified 8.4 percent more errors than predicted.

We estimated the reviewers would identify net overpayments of \$54.98 a case; the actual net overpayment was \$53.49. The amount of overpayments is particularly significant since the actual results identified 5.6 percent more underpaid cases, which would offset some of the identified overpayments.

For the 12-month period, May 1977 to April 1978, the projected net overpayments (confirmed by actual results) totaled about \$3.5 million. This annual overpayment compares to the predicted annual overpayment of \$4.3 million as shown on page 12. The difference is attributable, in part, to the fact that the \$4.3 million was based on reviewing 20 percent of the cases, whereas only 15 percent of the cases were actually reviewed.

We also compared review results with the results of the Quality Control Review for the period January to June 1977.

	<u>Quality Control</u>	<u>GAO/District high overpayment formula</u>
Average monthly net overpayment per case reviewed	\$ <u>39.00</u>	\$ <u>53.49</u>
<u>Error category</u>		
	(percent of error cases)	
Ineligible	12.1	21.5
Overpaid	24.5	21.6
Underpaid	<u>6.0</u>	<u>8.6</u>
Total	<u>42.6</u>	<u>51.7</u>

As indicated above, the average monthly net overpayment per case was \$14.49, or about 37 percent higher than the net overpayment obtained by Quality Control, which uses random sampling to select cases for review. ^{1/} The table also shows the percent of error cases identified by the reviews. Both these factors show how effective the formula is in directing reviewers toward problem cases.

GUIDELINES FOR SYSTEM DEVELOPMENT

Although the formulas can help select high probability error cases, they are only one part of the total management

^{1/}No criticism is intended. Quality Control's function is to report the percentage of error cases in the caseload, not specifically to detect errors.

system needed to get effective results. Working with the District, we developed an implementation plan to provide controls essential for an efficient and effective system. This system included (1) controls over case selection, (2) monthly progress reports, (3) Quality Control evaluation of redetermination reviews, and (4) plans to validate and update the formula. Procedures should also be established for referring to legal counsel cases where the recipients have willfully misrepresented facts concerning their eligibility for welfare. Prosecution of these cases would help deter similar cases from getting on the welfare rolls. These controls were considered important for District operations; other jurisdictions may require the same or different controls.

1. Controls over selecting cases for review--Cases with the highest score must be reviewed first; review of lower scored cases defeats the purpose of the formula. Each month a new list of cases due for review must be prepared. Selection of cases for review must be made from the current month's list.
2. Monthly progress reports--Results of reviews of cases selected must be reported each month.
 - (a) The type of errors and their causes must be reported so that management can act to prevent similar errors from recurring. For example, an error may occur because employees misinterpret certain operating instructions; employee training may be necessary.
 - (b) The number of cases assigned and reviewed by each employee should be reported to assist management in maintaining and assessing employee productivity.
 - (c) Information needs to be reported to management on the welfare centers where the case is handled (there are 10 centers handling cases in the District) and the person responsible for the case. This data may indicate or highlight whether there is a concentration of error or certain type of error at a particular location. It may also provide more employee accountability in handling the welfare caseload.
3. Evaluation of redetermination reviews--Cases identified using the formula and reviewed by the redetermination caseworker should be marked, and, if selected by Quality Control, a report made on the

effectiveness of the redetermination review. The report will identify errors found by the Quality Control Group that were missed by the redetermination caseworker.

4. Plans to validate and update the formula--Using current cases reviewed by Quality Control, the formula should be reviewed periodically and updated if necessary.
5. Referral to legal counsel--All cases where the recipients have willfully misrepresented the facts concerning their eligibility for welfare should be referred to legal counsel for prosecution. Prosecutions should have significant deterrent effects on similar cases getting on the welfare rolls.

CHAPTER 5

DOES THE FORMULA NEED UPDATING?

Yes. The case characteristics used to develop the formula were based on historical data, and because of changing conditions, its usefulness for predicting potential error cases may not be the same in the future. Different case characteristics may surface as the predominant error predicting factors. Similarly, changes in the AFDC caseload, regulations, and procedures, could, over time, decrease or increase the formula's capability to select potential error cases.

Validation studies should be periodically made to test for changes in the formula's ability to select cases potentially in error. These studies could be made using the same procedures and analyses that were followed in the formula's development.

Appendix VII shows the improvements that could be made to the formulas by adding additional characteristics.

CHAPTER 6

CAN ERROR CASE SELECTION METHODS BE USED BY STATE AND LOCAL GOVERNMENTS?

The approach we used to develop the formulas can be used by State and local governments. Data similar to that used in developing the methods for the District's use should be available in other jurisdictions. Formulas tailored to meet the individual needs of each location could be developed for improving welfare program administration.

Selecting cases that have a high potential to be in error, using formulas similar to the one used by the District, will be particularly important in those jurisdictions where cases are not being reviewed every 6 months. Better use of manpower should result because they would be assigned to review the high risk cases. Also, erroneous payments should be reduced.

According to HEW officials, information is not available showing the number of welfare agencies within each State that are complying with the 6-month review requirement. A special study is underway to obtain this data. HEW's Quality Control reports show, however, on a State-wide basis, that all cases were not reviewed every 6 months. The following, based on Quality Control review results for the 6-month period ending June 30, 1977, summarizes the estimated percent of cases in the universe that were not reviewed within the 6-month requirement. In 40 States, and Puerto Rico, and the District, some of the cases were not reviewed for 1 year or more.

<u>Percent of AFDC cases where no action was taken within 6-months</u>	<u>Number of States (note a)</u>
--	--------------------------------------

Under 1 percent	3
1 to 5 percent	23
5 to 10 percent	11
10 to 15 percent	7
15 to 20 percent	3
20 to 25 percent	2
25 to 30 percent	-
30 to 35 percent	1
35 to 40 percent	-
40 percent and over	b/_3
Total	<u>53</u>

- a/ Includes Puerto Rico, Virgin Islands, and the District
b/ Includes the District; 68.9 percent of the cases
have not had any action within 6 months.

In States where a significant number of cases are not being reviewed every 6 months, benefits similar to those being achieved in the District could be realized. In States where only a small percentage of the cases are not being reviewed every 6 months the use of formulas to identify potential error cases should permit caseworkers to correct such cases more quickly because the potential for surfacing error cases is enhanced.

According to HEW information for the first 6 months of 1977, the nationwide average monthly caseload was about 3.5 million. Of these, about 18 percent were either ineligible or overpaid. The amount of money misspent, Federal and State, on these cases was about \$440 million. Another 5 percent were underpaid; the amount underpaid was about \$45 million.

The use of similar formulas could have an impact on reducing the amount of money paid out on erroneous AFDC cases. In addition to reducing erroneous welfare payments, other results will be reductions in medicaid and food stamp benefits paid to erroneous AFDC cases.

The formulas should be used as a supplement, and not a substitute, for complying with HEW regulations requiring all cases to be reviewed every 6 months.

CHAPTER 7

CONCLUSIONS, RECOMMENDATIONS, AND AGENCY COMMENTS

CONCLUSIONS

HEW regulations require that each AFDC case be reviewed every 6 months for continued eligibility and correctness of payments. According to the District, insufficient staff has permitted only about 20 percent of its caseload to be reviewed every 6 months. Delays in reviewing contribute to the high error rate--the longer a case goes without being reviewed the more apt it is to be in error.

The three formulas we developed could help the District identify errors in the caseload and allow more efficient use of staff.

Since May 1977, when the District started using one of the formulas to select potential error cases it has significantly reduced erroneous welfare payments and improved management of the welfare program. The successes achieved by the District in using the formulas should be achievable by other local and State governments.

HEW provides technical assistance to States by identifying, evaluating, and reporting to them improvements in welfare administration, such as the methods discussed in this report. We believe this report, if distributed, could help States develop similar formulas to assist them in reducing erroneous payments and making more efficient use of staff.

RECOMMENDATIONS

The Secretary of HEW should distribute copies of this report to State and local governments and emphasize to them that using formulas similar to the ones we developed could help in improving the administration of their welfare program and reducing erroneous welfare payments.

AGENCY COMMENTS

The Director, Division of Procedures, Office of Family Assistance, Social Security Administration, Department of Health, Education, and Welfare, provided oral comments on our report on December 4, 1978. He was speaking on behalf of the Associate Commissioner, Office of Family Assistance.

The Director took no issue with GAO's efforts in the District and was supportive of them. His concern was solely with the report as written and whether it would serve as a model for States to use as recommended to the Secretary of HEW. He viewed a model as a workload planning system using the error prone profile (formula) as a tool and as one aspect of such system. He said that there is a need to present the system as a whole in order to have a useful presentation. He specifically mentioned that the report should have provided more detail on the (1) selection of case characteristics, (2) use of step-wise discriminant analysis to develop formulas, and (3) guidelines and management controls essential for an efficient and effective system. The Director stated that the report does not tell States what to do and how to do it. However, the Director did not provide specifics for revising the report.

Our report was not intended to be a manual of procedures for guidance to State and local governments. It was written to explain what we did in the District to improve welfare case selection for review and the benefits achieved by such improvement.

We recognize in the report that the formula is but one part of the total management system. For example, we discussed the need for the District to establish accountability and productivity reporting by caseworker, and welfare center; quality control of work performed; procedures for identifying causes of errors so that they can be corrected to minimize error repetition; and a system for referring potential fraud cases to the Corporation Counsel for prosecution to provide a deterrent to minimize ineligibles from entering the welfare rolls.

Because each State and local government is different, a case management system mentioned by the Director, Division of Procedures, must of necessity be tailored to fit its circumstances. We believe that HEW, in carrying out its technical assistance responsibility, can provide the help State and local governments need to adapt a similar formula to meet their management needs.

The Director said that the States would not be convinced to use the formula because the District has used it for over 1 year without reducing its error rate. He said that the dollar results would not be sufficiently prominent to sell States on using similar formulas on the basis of the District's experience. We disagree. The important consideration is not a reduction in the error rate per se but in

reducing unnecessary welfare payments. Errors that cause no change in payment determination, although needing attention, are generally of no real consequence.

In the District, the use of the formula has nearly doubled the reduction of erroneous welfare payments that could have been obtained using the District's procedures. Payments should be made only to eligible recipients and for the proper amounts. A formula similar to that used by the District can help State and local governments achieve the desired result.

The Director mentioned that his office is planning a national workshop for April 1979 on workload planning with the aid of error prone profiles and that the District of Columbia will be involved in this activity and will have an opportunity to demonstrate its progress.

We believe that the distribution of our report in advance of the workshop will greatly assist participants when workload planning is discussed by HEW in April 1979. We believe also that the report provides valuable information for State and local governments to use in improving their management systems for welfare case handling and review. We believe benefits similar to those of the District are possible for those who develop potential error case selection formulas as part of their management of welfare caseloads.

We agree with the Secretary, HEW, that waste in welfare payments be eliminated. We believe that our report could help State and local governments make needed improvements to reduce erroneous welfare payments.

CHARACTERISTICS USED TODEVELOP THE THREE GAO/DISTRICT FORMULAS

The following lists the characteristics used to develop the three formulas.

1. Number of adults in the assistance group.
2. Number of children in the assistance group.
3. Total number of people in the assistance group.
4. Amount of monthly AFDC payment.
5. Amount of payment per person in the assistance group.
6. Actual fixed payment less fixed grant payment.
7. Work incentive program registrant.
8. Presence of earned income.
9. Sex of head of household.
10. Monthly shelter cost.
11. Amount of monthly earned income.
12. Welfare center handling the case.
13. Age of youngest child in the assistance group.
14. Age of oldest child in the assistance group.
15. Age of adult male in the assistance group.
16. Age of adult female in the assistance group.
17. Range of children's ages in the assistance group.

The above characteristics may not be the only case elements that indicate error potential. In performing our research of case files, studies on case selection methods and general knowledge of the District's caseload and public assistance operations, we initially identified 74 characteristics which might have had the potential to predict

whether a case had a high error probability; however, many of these were not in the District's computer file on all AFDC cases.

The 74 characteristics were collected for the 2,481 cases reviewed by the Quality Control Group. The data was obtained from two primary sources.

A Quality Control Review Schedule (see app. II) is prepared for each case reviewed and contained many of the identified characteristics. The remaining characteristics were collected from individual case folders. To help collect the characteristics from the folders, we developed a data collection instrument (see app. III). These two documents standardized the collection of data and facilitated its entry into the computer for analysis.

Preliminary tests indicated which of the characteristics had predictive power and may have ultimately been incorporated into one or more of the formulas. But, in our judgment, the time and costs necessary to revise existing computer files to include all of these items for 31,300 cases outweighed the additional benefits. We, therefore, decided to concentrate our analysis on the 17 characteristics already in the District's computer file.

Although only 17 characteristics were used in developing the formulas, the District may want to consider additional characteristics in future analyses. A discussion of the impact on the formulas' effectiveness in using additional characteristics is included on page 41.

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 DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
 Social and Rehabilitation Service

Budget Bureau No. 063 R0148

QUALITY CONTROL REVIEW SCHEDULE

1. CASE NAME	3. CASE NUMBER	4. DATE ASSIGNED	6. REVIEW DATE
7. ADDRESS		5. DATE COMPLETED	7. REVIEWER (Name or number)

I. CASE RECORD INFORMATION

A. State Code 1 2	B. Local agency code 3 4 5	C. Review number 6 7 8 9 10	D. Month and year of review Mo: 11 12 Yr: 13 14	E. Month and year of most recent opening (ignore payment lapse of 3 months or less) Mo: 15 16 Yr: 17 18
F. Most recent action (check one) 1 <input type="checkbox"/> Approved application 2 <input type="checkbox"/> Redetermination		G. Number of months between most recent action and review month (if this action is concurrent with review month enter 00) 20 21		
H. Number of persons in assistance group and in household (a) Assistance group (persons whose needs and resources are included in the budget for the case under review) Adults with Federal matching 22 Children with Federal matching 23 24 Others not included in recipient count for Federal matching 25 Total 26 27 (b) Other persons in household 28 29 (c) Total persons in household 30 31				
I. Deprivation factor (check one) 1 <input type="checkbox"/> Death 2 <input type="checkbox"/> Incapacity 3 <input type="checkbox"/> Unemployed father 4 <input type="checkbox"/> Unmarried 5 <input type="checkbox"/> Non-legal separation (divorce and other) 6 <input type="checkbox"/> Divorced or legally separated 7 <input type="checkbox"/> Institutionalized (in hospital, nursing home, etc.) 8 <input type="checkbox"/> In Military service Continued absence from home: 32				
J. Mandatory WIN registration or participation (check one) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 33		K. Shelter cost arrangement (check one) 1 <input type="checkbox"/> Client responsible for full cost 2 <input type="checkbox"/> Client responsible for a share of cost 3 <input type="checkbox"/> Included in consolidated standard 9 <input type="checkbox"/> No cost 14		
L. Fuel and/or utilities cost arrangement (check one) 1 <input type="checkbox"/> Client responsible for full cost 2 <input type="checkbox"/> Client responsible for a share of cost 3 <input type="checkbox"/> Included with shelter cost 4 <input type="checkbox"/> Included in consolidated standard 9 <input type="checkbox"/> No cost 35				
M. Does the case record show that non-work related special circumstance allowances are included in the assistance payment? (check one) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 36				
N. Current employment status of caretaker relative and spouse included in assistance group (check appropriate box in both (a) and (b)) (a) Caretaker relative 1 <input type="checkbox"/> Not employed 2 <input type="checkbox"/> Full-time 3 <input type="checkbox"/> Part-time 4 <input type="checkbox"/> Employed on irregular basis 9 <input type="checkbox"/> Not in assistance group (b) Spouse 1 <input type="checkbox"/> Not employed 2 <input type="checkbox"/> Full-time 3 <input type="checkbox"/> Part-time 4 <input type="checkbox"/> Employed on irregular basis 9 <input type="checkbox"/> No spouse or spouse not in assistance group 38				
O. Does the case record show the presence of income and/or resources? (check YES or NO under each item) Earned income YES NO 1 <input type="checkbox"/> 2 <input type="checkbox"/> RSDI benefits YES NO 1 <input type="checkbox"/> 2 <input type="checkbox"/> Other pensions or benefits YES NO 1 <input type="checkbox"/> 2 <input type="checkbox"/> Contributions YES NO 1 <input type="checkbox"/> 2 <input type="checkbox"/> Other cash income YES NO 39 40 41 42 43 (a) Income Real property (home and other) YES NO 1 <input type="checkbox"/> 2 <input type="checkbox"/> Life insurance YES NO 1 <input type="checkbox"/> 2 <input type="checkbox"/> Liquid assets and personal property YES NO 44 45 46 (b) Resources				
P. Required notice to Child Support Agency that assistance has been granted to a child(ren) who has been deserted or abandoned by a parent (check one) 1 <input type="checkbox"/> Has been taken 2 <input type="checkbox"/> Has not been taken 9 <input type="checkbox"/> Not applicable 47				

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DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Social and Rehabilitation Service

Page 2

II. REVIEW SUMMARY

C. Disposition of case review (check one): <input type="checkbox"/> 1. Review completed <input type="checkbox"/> 2. Review not completed due to: <input type="checkbox"/> 2. Moved out of State <input type="checkbox"/> 3. Unwilling to give information <input type="checkbox"/> 4. Unable to locate <input type="checkbox"/> 5. Other (explain) _____ _____		40
If made 1 is checked, complete remainder of Section II below. If any other code is checked, no further entries are required on this schedule.		
D. Payment and type of error according to State policy: (a) Payment (insert 4 digit number for each dollar amount): <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">Total amount 49 50 51 52</div> <div style="text-align: center;">Amount in error 53 54 55 56</div> </div>		
(b) Error information (check one): <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">Amount correct 1. <input type="checkbox"/></div> <div style="text-align: center;">Overpayment 2. <input type="checkbox"/></div> <div style="text-align: center;">Underpayment 3. <input type="checkbox"/></div> <div style="text-align: center;">Totally ineligible 4. <input type="checkbox"/></div> </div> <div style="text-align: center; margin-top: 5px;"> If this is an eligible case with a correct amount of payment, no further entries are required on this schedule. </div>		
(c) If overpayment indicate number of persons (insert 0): <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">Ineligible persons with Federal matching 58 <input type="checkbox"/></div> <div style="text-align: center;">Other ineligible persons not included in recipient count for Federal matching 59 <input type="checkbox"/></div> </div>		
E. Primary error resulting in ineligibility or payment status occurred (check one): <div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> Before most recent action 1. <input type="checkbox"/> </div> <div style="width: 20%;"> At time of most recent action 2. <input type="checkbox"/> </div> <div style="width: 20%;"> Subsequent to most recent action 3. <input type="checkbox"/> </div> <div style="width: 20%; text-align: right;"> (If item 3 is checked enter number of months between occurrence of error and most recent action) 60 <input type="checkbox"/> </div> </div>		
F. Is there indication of willful misrepresentation of facts in this case? (check one): 1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No 3. <input type="checkbox"/> Not applicable		
G. Primary error — element (or sub-element), nature, and type: <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> Element (or Sub-element) 64 <input type="checkbox"/> 65 <input type="checkbox"/> 66 <input type="checkbox"/> </div> <div style="width: 20%;"> Nature 67 <input type="checkbox"/> 68 <input type="checkbox"/> </div> <div style="width: 30%;"> Agency or client type 69 <input type="checkbox"/> 70 <input type="checkbox"/> </div> </div>		

III. EXPLANATION OF CASE ERRORS

ELEMENTS (1)	NATURE OF ERROR (2)	MANUAL CITATION (3)

**DATA COLLECTION INSTRUMENT
USED TO COLLECT INFORMATION FROM
AFDC CASE FILES**

IDENTIFICATION

1. Case Name _____
2. GAO Auditor _____
- Card #(1) 2
3. Case Number (2-11)
4. Q.C. Review #(12-16)
5. Date of Q.C. Review
Mo. Yr.
(17-18) (19-20)

HOUSEHOLD (HOH)

6. HOH Sex (21)
Male 1 Female 2
7. HOH Birthdate
Mo. Yr.
(22-23) (24-25)
8. Spouse Birthdate
Mo. Yr.
(26-27) (28-29)
9. Number of children
(30-31)
10. Birthdate of Youngest Child
Mo. Yr.
(32-33) (34-35)
11. Birthdate of Oldest Child
Mo. Yr.
(36-37) (38-39)

ASSISTANCE GROUP (A.G.)

12. Adult Male Birthdate
Mo. Yr.
(40-41) (42-43)
13. Adult Female Birthdate
Mo. Yr.
(44-45) (46-47)
14. Birthdate of Youngest Child
Mo. Yr.
(48-49) (50-51)
15. Birthdate of Oldest Child
Mo. Yr.
(52-53) (54-55)

16. Number of Different Fathers (56)
(8 = 8 or more, 9 = Unknown)
17. Payee(s) if no Adult in Assistance Group (57)
Male 1 Female 2 Male and Female 3
Payee in AG 6 Unknown 9

FAMILY STRUCTURE AND EMPLOYMENT

18. Caretaker/Payee is the Natural Parent of: (58)
All Children in AG 1
Some Children in AG 2
No Child in AG 3
Unknown 9
19. Caretaker/Payee Marital Status (59)
Single 1 Divorced 4
Married 2 Widowed 5
Separated 3 Unknown 9
20. Current Occupation of Caretaker/Payee (60)
Unemployed 1 Skilled Laborer 5
Professional 2 Semi-Skilled Laborer 6
Semi-Professional 3 Common Labor 9
Unknown 9

RESOURCES--OF PEOPLE IN ASSISTANCE GROUP

21. Year of Motor Vehicles (61-62)
(00 = No Motor Vehicle, 99 = Year Unknown)
22. Type of Housing (63)
Public Housing 1 Own Home 5
Rented Apartment 2 Other's Home 6
Rented House 3 Nursing Home 7
Rented Trailer 4 Unknown 9
23. Monthly Shelter Cost (64-66)
(000 = None, 999 = Unknown)
24. Monthly earned Income (67-69)
(000 = None, 999 = Unknown)
25. Monthly RSDI Benefits (70-72)
(000 = None, 999 = Unknown)

METHODOLOGY USED IN TESTING THE FORMULAS

In developing the three formulas, we used 833 cases reviewed by the Quality Control Group during July to December 1975. Using discriminant analysis, case characteristics were identified which best separated the cases into the desired groups. An individual formula was developed for each of our three objectives. Each case was scored with the three formulas. An analysis was then made to determine the relationship between the case scores and the results of the Quality Control audit, that is, whether the case was eligible or ineligible, overpaid or not overpaid, and overpaid by \$100 or more or not overpaid by that amount.

The correlation of case score and audit results was made using the point biserial correlation coefficient equation (r_{pb}) ¹/ The results are shown below.

<u>Formula</u>	<u>r_{pb} coefficient</u>	<u>Significance</u>
Overpayment formula	.3665	.001
High overpayment formula	.2914	.001
Ineligible formula	.3221	.001

To further test the formulas, the scores for each case in the sample were ranked from highest to lowest. The cases were grouped assuming reviews of 20, 40, and 60 percent, and were then examined to determine the percent of cases in these groups which were ineligible, overpaid, and underpaid. The same computations were made as if the cases in each group were selected using random sampling. Table I shows the results of this test.

¹/The point biserial correlation coefficient measures the amount of association between a dichotomus variable (i.e., overpayment vs. nonoverpayment) and a continuous variable (i.e., case score). The coefficient can range from zero to one. A zero coefficient indicates that no relationship exists between the score a case is assigned and whether the case is in error; a coefficient of one indicates a perfect relationship; i.e., a case score will indicate that the case is in error. The significance of the coefficient represents the probability that the true value of the coefficient is zero; for this analysis the probability that there was no relationship between the case score and whether a case is in error was 1 out of 1,000.

Table I
Results of Testing the Formulas
July-December 1975 Sample (note a)

Percent of cases reviewed	Selection methods	Percent of cases in sample which were			Average monthly net overpayment per case reviewed
		Ineligible	Overpaid	Underpaid	
20	Random sampling	13	24	7	\$42
	GAO/District formulas:				
	Overpayment formula	21	42	13	48
	High overpayment formula	25	31	5	82
	Ineligible formula	29	23	6	53
40	Random sampling	13	24	7	42
	GAO/District formulas:				
	Overpayment formula	19	39	10	54
	High overpayment formula	20	31	7	65
	Ineligible formula	24	22	7	53
60	Random sampling	13	24	7	42
	GAO/District formulas:				
	Overpayment formula	17	32	9	53
	High overpayment formula	16	30	7	54
	Ineligible formula	19	23	7	47

a/These results were not used in app. V as estimates of how well the formulas would have done from July to December 1975. This is discussed on page 36.

Testing the formulas on other cases

To see if the formulas would be effective in identifying errors in cases other than those on which they were developed, we tested them on the cases reviewed by Quality Control during the sample periods, July to December 1974 (809 cases) and January to June 1975 (839 cases). Case scores were computed for each case and point biserial correlation coefficients were determined. The results were as follows:

<u>Formulas</u>	<u>July-December 1974 sample</u>		<u>January-June 1975 sample</u>	
	<u>r_{pb}</u> <u>coefficient</u>	<u>Significance</u>	<u>r_{pb}</u> <u>coefficient</u>	<u>Significance</u>
Overpay- ment formula	.3059	.001	.3192	.001
High over- payment formula	.2213	.001	.1460	.001
Ineligible formula	.1301	.001	.1800	.001

The coefficients were lower than those obtained on the original data indicating that the predictive power of the equations had been reduced. Such a result is expected and is acceptable as long as correlation (as in this case) remains at an acceptable level.

We also tested the formulas on these two sample periods by comparing the expected results with the expected results of random sampling. Tables II and III show these test results.

Table II
Results of Testing the Formulas
July-December 1974 Sample

Percent of cases reviewed	Selection methods	Percent of cases in sample which were			Average monthly net overpayment per case reviewed
		Ineligible	Overpaid	Underpaid	
20	Random sampling	13	22	7	\$39
	GAO/District formulas:				
	Overpayment formula	17	43	15	60
	High overpayment formula	19	39	5	74
	Ineligible formula	19	16	11	34
40	Random sampling	13	22	7	39
	GAO/District formulas:				
	Overpayment formula	15	35	10	51
	High overpayment formula	16	30	5	56
	Ineligible formula	17	20	10	40
60	Random sampling	13	22	7	39
	GAO/District formulas:				
	Overpayment formula	13	31	10	44
	High overpayment formula	16	28	6	52
	Ineligible formula	16	22	7	42

Table III
Results of Testing the Formulas
January-June 1975 Sample

Percent of cases reviewed	Selection methods	Percent of cases in sample which were			Average monthly net overpayment per case reviewed
		Ineligible	Overpaid	Underpaid	
20	Random sampling	13	25	6	\$43
	GAO/District formulas:				
	Overpayment formula	15	48	15	45
	High overpayment formula	17	42	4	70
	Ineligible formula	26	28	9	60
40	Random sampling	13	25	6	43
	GAO/District formulas:				
	Overpayment formula	14	40	8	50
	High overpayment formula	13	35	6	53
	Ineligible formula	18	27	8	45
60	Random sampling	13	25	6	43
	GAO/District formulas:				
	Overpayment formula	13	35	8	48
	High overpayment formula	13	31	5	48
	Ineligible formula	14	24	7	39

MEASURING THE FORMULAS'CAPABILITY TO SELECT POTENTIALERROR CASES

To measure the capability of the three formulas to identify errors, we made an analysis to estimate the percent of errors and the amount paid in error that would have been obtained had the three GAO/District formulas, the priority system, and the random sampling been used to identify cases for review from July through December 1975.

To make this analysis, we applied the formulas to the cases audited by the Quality Control Group. Using the formulas a score was computed for each case audited during the two sample periods in 1975. Within each sample period, we then ranked the cases and determined whether the cases would have been selected for review at the 20-percent, 40-percent, and 60-percent review levels. We then determined, for each review level, the percentage of the cases which the Quality Control Review determined to be ineligible for welfare, eligible but overpaid, and eligible but underpaid. We computed, also, based on the Quality Control findings, the average amount of monthly overpayment per case reviewed. ^{1/}

Similar analyses and computations were made as if the cases in the July-December 1975 sample were selected for review using the District's priority system and random sampling. The results follow.

^{1/}We used the two sample periods in 1975 because the three formulas were developed using the July-December 1975 sample period, so estimates from this sample would be expected to be high. It was felt that the estimates from the previous sample period would be low; thus, the two periods were averaged to offset the expected biases.

Table I
Comparative Estimated Results
From Using Different Error Case
Selection Methods During July-December 1975

Percent of cases reviewed	Selection methods	Percent of cases selected for review that would be in error			Average monthly net overpayment per case reviewed
		Ineligible	Overpaid	Underpaid	
20	District's Priority system	18	41	14	\$32
	Random sampling	13	24	7	42
	GAO/District formulas:				
	Overpayment formula	18	45	14	46
	High overpayment formula	21	36	5	76
	Ineligible formula	27	25	8	57
40	District's Priority system	17	27	8	34
	Random sampling	13	24	7	42
	GAO/District formulas:				
	Overpayment formula	17	39	9	52
	High overpayment formula	17	33	6	59
	Ineligible formula	21	25	7	49
60	District's Priority system	16	23	7	36
	Random sampling	13	24	7	42
	GAO/District formulas:				
	Overpayment formula	15	34	8	50
	High overpayment formula	15	31	5	51
	Ineligible formula	17	23	7	43

FORECASTING RESULTS FROM USINGDIFFERENT ERROR CASESELECTION METHODS

An analysis was made to determine results if the various selection methods had been used to identify cases for 1 year ending June 1976. Our estimated results, in view of the assumptions made, do not represent what the error rate and savings in erroneous welfare payments will be, but rather what they might be. Our major assumptions in performing the analysis are:

- The average monthly caseload would be about 31,800.
- The beginning of the year caseload, based on the results of the Quality Control Group reviews for the period July-December 1975, contained the following error rates:
 - 13.4 percent ineligible cases.
 - 24.4 percent overpaid cases.
 - 6.6 percent underpaid cases.
- The effectiveness of the redetermination reviews in correcting errors would have been the same as achieved under existing procedures. If a case contained an error, the probability that redetermination reviews corrected the error was:
 - 73.3 percent for ineligible cases.
 - 68.7 percent for overpaid cases.
 - 60 percent for underpaid cases.
- The percent of previously correct cases becoming error cases in the following month would be:
 - 0.5 percent ineligible cases.
 - 1 percent overpaid cases.
 - 0.3 percent underpaid cases.

--Predictive power of all methods to identify error cases would remain at the same levels estimated for July-December 1975.

--The savings in welfare payments, attributable to corrections made when a case is reviewed, stop if the case becomes in error later.

The results of our analysis are shown in table I.

Table I

Estimated Effect on Error Rate and Welfare Payments
by Using Different Error Case Selection Methods
Fiscal Year 1976

<u>Percent of cases reviewed</u>	<u>Selection methods</u>	<u>Percent of caseload in error at yearend</u>			<u>Net savings in erroneous welfare payments</u> (millions)
		<u>Ineligible</u>	<u>Overpaid</u>	<u>Underpaid</u>	
20	District's Priority system	12.2	20.7	5.1	\$1.87
	Random sampling	13.2	24.4	6.7	2.39
	GAO/District formulas:				
	Overpayment formula	12.2	19.8	5.2	2.70
	High overpayment formula	11.3	21.8	7.2	4.31
	Ineligible formula	9.9	24.4	6.5	3.28
	<u>Error rate at beginning of year</u>	13.4	24.4	6.6	
40	District's Priority system	8.7	18.3	4.9	3.95
	Random sampling	10.1	19.2	5.4	4.60
	GAO/District formulas:				
	Overpayment formula	8.8	13.8	4.6	5.72
	High overpayment formula	8.7	15.9	5.7	6.50
	Ineligible formula	7.1	19.0	5.3	5.54
	<u>Error rate at beginning of year</u>	13.4	24.4	6.6	
60	District's Priority system	6.3	15.6	4.1	5.83
	Random sampling	7.6	14.8	4.3	6.63
	GAO/District formulas:				
	Overpayment formula	7.0	10.5	3.7	7.91
	High overpayment formula	6.9	11.7	5.1	8.26
	Ineligible formula	5.8	15.6	4.1	6.94
	<u>Error rate at beginning of year</u>	13.4	24.4	6.6	

UPDATING AND IMPROVING THE FORMULASBY ADDING ADDITIONAL CHARACTERISTICS

As discussed in chapter 2, the characteristics used to develop the formulas were limited to the data available for all AFDC cases on District computer files. This was done so that the computer could score each case immediately without the cost--in time and money--of collecting and entering additional data.

The case characteristics not used in the formula development could very well improve the predicting power of the formulas. Using the July-December 1975 Quality Control sample and discriminant analysis procedures used to develop the formulas, we tested to see if other characteristics could improve the formulas' capability to predict whether a case would be in error. Three characteristics were found to have potential for improving the formulas. These characteristics and the formulas affected are as follows.

<u>Characteristics</u>	<u>Formulas</u>		
	<u>Ineligible</u>	<u>High overpayment</u>	<u>Overpayment</u>
Number of months since case was last reviewed or application approved	X	X	X
Payee or caretaker is separated	X		
Number of children in the household is the same as the number of children in the assistance group	X		

The improvement in the point biserial correlation coefficient when these characteristics are included with those previously developed are on the next page.

<u>Formulas</u>	<u>rpb before including additional characteristics</u>	<u>rpb after including additional characteristics</u>
Overpayment formula	.3665	.3950
High overpayment formula	.2914	.3086
Ineligible formula	.3221	.3538

As shown, there is a higher correlation between case scores and whether a case would be in error with the addition of more characteristics. This suggests that the addition of these characteristics could improve, to some extent, the formulas' potential to identify error cases. We did not, however, determine the increase in the percent of error cases that would be identified through the use of these characteristics. An analysis would need to be performed to determine whether the increased benefits would offset the cost of collecting and maintaining the additional data on the computer file.

The above discussion emphasizes the need for performing periodic studies and validations to see if the formulas should be changed to increase their effectiveness.

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